Alessandro Sarti

Alessandro Sarti is a mathematician and epistemologist, Research Director at the Intstitute of Advanced Study EHESS of Paris. He is interested in the emergence and mutation of forms in the field of cognitive and living sciences. Particularly he is mainly interested in the heterogeneity of the conditions of generation of forms and of those processes that go under the name of differential heterogenesis capable of producing imaginative, uncertain and mutation dynamics. He teaches the course Post-structural dynamics at EHESS and the seminar Neuromathematics at Collège de France. He is editor in chief of the Springer series of books Lecture Notes in Morphogenesis.

Curriculum Vitae

Education

1997 PhD in Electronic Bioengineering from University of Bologna

1991 Laurea Magna cum Laude in Electronic Engineering from University of Bologna

1983 Diploma of Maturità Scientifica, Liceo Scientifico A. Tassoni di Modena

Academic Position

20012-present Director of Research, CNRS at Institute of Advanced Studies EHESS, Paris.

2009-2012 Director of Research DR2, CNRS at the Centre de Recherche en Epistémologie Appliquée (CREA) , École Polytechnique, Paris

2004-2009 Research Professor, Departement of Electronics, Information and Systems, Università di Bologna. Equivalent to HDR.

2001 - 2004 Researcher, Department of Electronics, Information and Systems, Università di Bologna.

1997 - 2000 Postdoc at the Department of Mathematics, University of California, Berkeley and Department of Mathematics, Lawrence Berkeley National Laboratory, University of California, Berkeley. Supervisor: Prof. James A. Sethian (Norbert Wiener Prize in Applied Mathematics 2004).

Teaching Activity

Neuromathematics *(Neuromathématiques)***,** EHESS seminar at Collège de France, Paris.

Morphodynamics: aestethics, science of nature, social sciences *(Morphodynamiques : esthétique, sciences de la nature, sciences sociales)***,** EHESS, Paris.

Post-structural dynamics (*Dynamiques post-structurelles*), EHESS seminar.

Previous Teaching Activity

Neuroimaging and Vision, Mathematics Department , University of Bologna, 2003-2009

Mathematical models of vision Master for Applications of Mathematics, 2003-2006 Mathematics Department, Bologna University

PDEs in Image Analysis PhD program in Applied Mathematics, 1997-2000 Mathematics Department, University of California, Berkeley

Ability in coordinating an international research team or research of young people

A. Sarti has been director of Director of 20 PhD Thesis and of 20 Laurea Thesis, Codirection of 15 Laurea Thesis. He

has coordinated the scientific work of more than 10 Postdocs in 7 EU projects and 1 Senior Strategic Project of the University of Bologna.

Direction of "Interdipartimental Group of Neuromathematics and Vision" (with G.Citti), University of Bologna http://www.vision.unibo.it/

Direction of the Focus group "Neuromathematics and Visual Cognition", Institute of Advanced Studies, University of Bologna

Direction of the research group "Neuromathematics of Vision" at CAMS-EHESS for the ED3C doctoral school.

Awards

Best Teaching Activity 2002-2003 (University of Bologna)

Best Teaching Activity 2003-2004 (University of Bologna)

Best Teaching Activity 2006-2007 (University of Bologna)

Best Teaching Activity 2008-2009 (University of Bologna)

Funding ID Coordination Activities and Grants

MANET EU Marie Curie Initial Training Network Metric analysis for emerging technologies. 2013-2018
Devoted to the training of young researchers on new frontier of mathematics and its applications.
It consists of 9 European University, an alliance of careful selected partners with a high reputation in a set of complementary disciplines consisting in Geometric Measure theory Subriemannian PDE, Mathematical modelling in geometrical setting and Neuroscience.

EU NEST GALA Sub-Riemannian geometric analysis in Lie groups, 2006-2009
The Project aimed to develop instruments of sub-riemannian geometry for a variety of applications and in particular for vision. The role of DEIS and Mathematics Department of University of Bologna has been to produce mathematical and computational models of the functional architecture of the primary visual Cortex. The Project has been coordinated by the co-PI.

EU NEST Bioemergences, 2006-2009
The project aimed to reconstruct in space and time the lineage tree of embryos of zebrafish and to compare the lineage trees of animals under the effect of different anticancer drugs. The role of the University of Bologna has been to undertake the measurement of the individual susceptibility to response to treatement by means of computer vision techniques. The consortium was constituted by CREA (Paris, France), CNRS (France), Institut Pasteur (France), Insitut Marie Curie (France), University of Bologna (Italy) and University of Bratislava (Slovakia).

EU NEST Embryomics, 2005-2008
The project aimed to reconstruct in space and time the lineage tree of embryos of zebrafish, in order to understand the morphogenesis of the animal. The role of the University of Bologna has been to synthesize and implement mathematical and computational models for denoising, segmentation and tracking of confocal microscopy images. The consortium was constituted by CREA (Paris, France), CNRS (France), University of Bologna (Italy) and University of Bratislava (Slovakia).

EU ALFA II-0366-FA Computer Vision Foundations and Applications, 2004-2007
This ALFA Project has been set up for the exchange of PhD students between Europe and Latin America. The University of Bologna hosted 2 PhD students, one from Uruguay and one from Argentina, for 3 years. The consortium was constituted by École Normale Supérieure de Cachan (France, coordinating institution, J-M. Morel), Universidad de la República (Uruguay, coordinating institution, Gregory Randall), Università di Bologna (Italia, A.Sarti), Universidad Pompeu Fabra (Spain, V.Caselles), Universidad de Canarias (Spain, L.Alvarez), Universitad de Buenos Aires (Argentina, M.Mahal).

Strategic Project of University of Bologna Senior Class: **Neuromathematics of Visual Perception**, 2005-2008 (Coordinator).
The Project aimed to study Mathematical models of visual perception based on the functional architecture of the primary visual cortex. The team was extremely interdisciplinary, involving 5 different departments of the University of Bologna: Physiology, Psychology, Semiotics, Mathematics and Engineering. The project ended with the final conference "Semiotica e Percezione Visiva", Scuola Superiore di Studi Umanistici, Bologna.

Academic grant for the Focus group "Neuromathematics and Visual Cognition", Institute of Advanced Studies, University of Bologna, 2005.
The Focus group "Neuromathematics and Visual Cognition" is a group of the Institute of Advanced Studies of the University of Bologna. The grant aimed to support interdisciplinary research in the field of visual perception and

cognitive systems.

Conference Grants from University of Bologna 2006-2009

Invited talks within international conferences and schools (selected)

- Invited speaker "Heterogenesis and signification", International Center of Semiotics Umberto Eco, 8 September 2021, Urbino.
- Invited speaker " The differential brain: from Neurogeometry to Heterogenesis", 11 March 2020, Fields Institute, Toronto.
- Invited speaker "Intelligence between information processing and sense-making", 25 October 2018, ETH, Zurick,
- Invited speaker "Mathematics between normativity and imagination", December 2017, Ecole Normale Superieure, Paris
- Invited speaker "Formal models of functional architectures", May 2016, European Institute of Theoretical Neuroscience, Paris
- Invited speaker «A Gauge theory for coupling cortical layers », First International Conference of Mathematical Neuroscience, 8-10 June, 2015, Nice,France.
- Invited speaker « Phenomenological Gestalten and figural completion: a neurogeometrical approach », Colloque international Geometrical Models in Vision, 22-24 Octobre 2014, Institut Henry Poincaré, Paris.
- Invited Speaker "Subjective surfaces", Mathematics Department, UC Berkeley, May 2001.
- Invited Speaker "Subjective surfaces: a geometric and computational model for contour completion", at Scientific Computing and Computational Mathematics Department, University of Stanford, 2001.
- Invited Speaker "Subjective surfaces: from perceptual completion to medical image processing", at the Image Processing and Analysis Group, Yale School of Medicine, University of Yale, 2001.
- Invited Speaker "Subjective surfaces", Mathematics Department, University of California, Los Angeles, 2001.
- Invited Speaker , "A Cortical Based Model of Perceptual Completion in the Roto-Translation Space" Centre de Mathématiques et de leurs Applications, École Normale Superieure, Paris, 2003.
- Invited Speaker, "A Cortical Based Model of Perceptual Completion in the Roto-Translation Space", Palazzone di Cortona, Scuola Normale Superiore di Pisa, May 2003, "International workshop of PDEs in Lie Groups".
- Invited Speaker "On the sub-Riemannian structure of the visual cortex", Johann Radon Institute for Computational and Applied Mathematics, Linz, 2008,Workshop on Bioimaging II / PDEs, November 19 - 23, 2007.
- Invited Speaker "On the sub-Riemannian structure of the visual cortex", Center for Complex Systems, "Epistemological problems in complex systems", Paris, July 2009.
- Invited Speaker "Neuromathematics of the Visual cortex", International Conference "Models of the Mind", Rome, 14-15 May 2010.
- Invited Speaker "On the Origin and Nature of Neurogeometry", International TAUC Conference on "From mathematical image analysis to Neurogeometry of the brain", Paris, 16-18 December 2010.

Organization of International Conferences (selected)

Organizer of the workshop "**Level Set Methods for Medical Imaging Applications",** workshop at the IEEE Engineering in Medicine and Biology Society (EMBS), September 1-5 2004, San Francisco.

Organizer of the Conference "**From Neuroscience to Phenomenology: Mathematical Models of Visual Perception**", July 1-3 2004, Università di Bologna, Scientific committee J.M. Morel, J.Petitot, A.Sarti, J.A. Sethian, S. W. Zucker.

Organizer of the Conference **"Neuromathematics and Vision**", september 2006 at Centro di Ricerca Ennio de Giorgi, Scuola Normale Superiore di Pisa. Scientific committee J.M. Morel, J.Petitot, A.Sarti, J.A. Sethian, G. Tomassini, S. W. Zucker.

Organizer of the workshop "**Semiotica e Percezione**", 6-8 October 2008, Scuola Superiore di Studi Umanistici, Bologna.

Organizer of the Conference **"Subriemannian geometry and vision"**, Bologna. 31- September 4 2009. Scientific committee: G. Citti, P. Koskela, J. Petitot, H. M. Reimann, A. Sarti, R. Serapioni, J. A. Sethian, S. W.Zucker.

Organizer of the workshop "**Representation Theory and Vision**", Dipartimento di Matematica, Bologna, 20-21 September 2010.

Organizer of the Series of Seminars "**Neuromathématique et modèles de la perception**", Institut Henri Poincaré,

Paris, 2011 (with J. Petitot and G.Citti).

Organizer of the Series of Seminars "**Neuromathématique et modèles de la perception**", Institut Henri Poincaré, Paris, 2012 (with J. Petitot and G.Citti).

Organizer of the International Conference **"Geometric models in Vision"**, Institut Henry Poincaré,Paris, 2014 with J.Petitot, G.Citti, U.Boscain, J.P. Gauthier.

Editorial Activity

A.Sarti is editor in chief of the Springer Series "Lecture Notes in Morphogenesis", Springer-Verlag Publisher. Since October 2012
http://www.springer.com/series/11247

Member of the editorial board of "Intellectica", Journal of the Association for Research on Cognitive Science.

Referee Activity

Journal of Mathematical Neuroscience

Journal of Mathematical Imaging and Vision

Journal of Biological Cybernetics

SIAM Journal of Multiscale modelling and Simulations

IEEE Transactions on Pattern Analysis and Machine Intelligence

IEEE Transactions on Medical Imaging

IEEE Transactions on Biomedical Engineering

IEEE Transactions on Ultrasonics, Ferroelectrics and Frequency Control

Soft Computing

LIST OF SELECTED PUBLICATIONS

H-index 33

Peer-reviewed journals

A. Sarti and A. Longo editors, « Differential heterogenesis », LaDeleuziana, n.11, 2020

Alessandro Sarti et Igor Pelgreffi, L'hétérogènese différentielle: Formes en devenir entre mathématiques, philosophie et politique, Multitutdes, n.78, pag. 154-163, 2020

A. Sarti, G. Citti, D. Piotrowski, "Differential heterogenesis and the emergence of semiotic function", Semiotica, Vol. 230: 1-34, 2019

S.Abbasi, M.Favali, G.Citti, A.Sarti, B.H.Romeny, "Curvature Integration in a 5D Kernel for Extracting Vessel Connections in Retinal Images", Transactions Image Processing, Vol. 27, n.2, pag.606-621, 2017.

M.Favali, G. Citti, A. Sarti, "Local and global gestalt laws: A neurally based spectral approach", Neural Computation, Vol. 29, No. 2, Pag. 394-422, 2017

B.Franceschiello, G.Citti, A.Sarti, "A Neuromathematical Model for Geometrical Optical Illusions", Journal of Mathematical Imaging and Vision, in press, 2017

M.Favali, S. Abbasi-Sureshjani, B. H. Romeny, and A. Sarti. "Analysis of vessel connectivities in retinal images by cortically inspired spectral clustering". Journal of Mathematical Imaging and Vision, 56(1):158-172, 2016

E.Faure, M.Campana, R.Cunderlik, O.Drblikova, L.Duloquin, R.Keller, B.Lombardot, C.Melani, M.Remesikova, B.Rizzi, T.Savy, G.Recher, C.Zanella, J.Kollar, D.Fabrèges, P.Villoutreix, J.Delile, P.Affaticati, B.Maury, A.Boyreau, I.Colin, S.Desnoulez, J.Nief, P.Calvat, P.Vernier, M.Frain, G.Lutfalla, P.Suret, R.Doursat, A.Sarti, K.Mikula, N.Peyriéras, P.Bourgine,
"A workflow to process 3D+time microscopy images of developing organisms and reconstruct their cell lineage", *Nature Methods*, 7, 2016.
http://www.nature.com/ncomms/2016/160225/ncomms9674/abs/ncomms9674.html

G.Citti, B.Franceschiello, G.Sanguinetti, A.Sarti, 'Sub-Riemannian mean curvature flow for Image processing', *SIAM Journal Imaging Science*, 9(1), pag 212-237, 2016.

A.Sarti, G.Citti, "The constitution of perceptual units in the functional architecture of V1", *J.Comput. Neuroscience*, 38(2), pag. 285-300, 2015.

G. Cocci, D. Barbieri, G. Citti, A. Sarti, "Cortical spatio-temporal dimensionality reduction for visual grouping". *Neural Computation* 27:1252-1293, 2015

G.Citti, A.Sarti, "A Gauge Field model of modal completion", *Journal of Mathematical Imaging and Vision*, Vol. 52, N.2, pag. 267-284, 2015.

D.Barbieri, G.Citti, A.Sarti, "How uncertainty bounds the shape index of simple cells", *The Journal of Mathematical Neuroscience*, Vol. 4, N.5, 2014.

D.Barbieri, G. Citti, G. Cocci, A. Sarti, A cortical-inspired geometry for contour perception and motion integration. *Journal of Mathematical Imaging and Vision* 49(3):511-529, 2013.

G.Cocci, D.Barbieri and A.Sarti, "Spatio-temporal receptive fields of cells in V1 are optimally shaped for stimulus velocity estimation", J. Opt. Soc. Am. A, 29(1), pp.130-138, 2012

D.Barbieri, G.Citti, G.Sanguinetti, A.Sarti,"An uncertainty principle underlying the functional architecture of V1", Journal of Physiology Paris, 106(5-6), pp. 183-193, 2012

A.Sarti, G.Citti, "On the origin and nature of neurogeometry", La Nuova Critica, 2011

C.Marchetti, A.Bianchi, M. Di Martino, L.Lancellotti, A.Sarti, "Validation of new soft tissue software in orthognatic

surgery planning", Intenational Journal of Oral and Maxillofacial Surgery, 40(1), pp. 26-32, 2011.

G.Sanguinetti, G.Citti, A.Sarti, "The statistics of contours of natural images in the affine group", Journal of Vision 2010.

D.Barbieri, G.Citti, G.Cocci, A.Sarti, "A cortical-inspired geometry for contour perception and motion integration", submitted to Journal of Mathematical Imaging and Vision.

G.Sanguinetti, G.Citti, A.Sarti,"A model of natural image edge cooccurence in the rototranslation group", Journal of Vision, 10(14):37, pp 1-16, 2010

G.Citti, M.Manfredini, A.Sarti, "Finite difference approximation of the Mumford-Shah functional in a contact manifold of the Heisenberg space", Communications on Pure and Applied Analsysis, pag. 905-927, vol. 9, n.4, 2010

M. Campana, B. Maury, M. Dutreix, N. Peyrieras, A. Sarti. (2010) Methods Toward In Vivo Measurement of Zebrafish Epithelial and Deep Cell Proliferation. *Elsevier-Computer Methods and Programs in Biomedicine*. 2010 May;98(2):1

M.Campana, A. Sarti. (2010) Cell Morphodynamics Visualization from Images of Zebrafish Embryogenesis. *Elsevier-Computerized Medical Imaging and Graphics*. 2010 Jul;34(5):394-403

C. Zanella, M. Campana, C. Melani , B. Rizzi, P. Bourgine , K. Mikula, N. Peyriéras, A.Sarti (2010) Cells Segmentation from 3-D+Time Confocal Images of Early Zebrafish Embryogenesis. *IEEE Transaction on Image Processing*; 2010 Mar;19(3):770-781.

P.Bourgine, R.Cunderlik, O.Drblikova, K.Mikula, N.Peyrieras, M.Remesikova, B.Rizzi, A.Sarti, 4D embryogenesis image analysis using PDE methods of image processing, Kybernetika, Vol. 46, No. 2 (2010) pp. 226-259.

Z. Kriva, K.Mikula, N. Peyriéras, B. Rizzi, A. Sarti, O. Stasovai, "3D early embryogenesis image filtering by nonlinear partial differential equations", Medical Image Analysis, Vol. 14, No. 4 (2010) pp. 510-526.

A.Sarti, G.Citti, J.Petitot,"Functional geometry of the horizontal connectivity in the primary visual cortex", Journal of Physiology-Paris, Vol. 103, n. 1-2, pag. 37-45, 2009

A.Sarti, G. Citti, J.Petitot, "The Symplectic Structure of the Primary Visual Cortex", Biological Cybernetics. vol. 98, pp. 33 – 48, 2008.

S. Corsaro, K. Mikula, A. Sarti, F. Sgallari. Semi-implicit co-volume method in 3D image segmentation. SIAM Journal on Scientific Computing. vol. 28, pp. 2248 – 2265, 2007.

P.Frolkovic, K.Mikula, N.Peyrieras, A.Sarti. A counting number of cells and cell segmentation using advection-diffusion equations. Kybernetika. vol. 43, pp. 817 – 829, 2007.

O.Drblikova, M.Komornikova, M.Remesikova, P.Bourgine, K.Mikula, N.Peyrieras, A.Sarti. Estimate of the cell number growth rate using PDE methods of image processing and time series analysis. Journal of Electrical Engineering. vol. 7/s, pp. 86 – 92,2007

C.Marchetti, A.Bianchi, M.Bassi, R.Gori, C.Lamberti, A.Sarti, "Mathematical modelling and numerical simulation in maxillo-facial virtual surgery", Journal of Craniofacial Surgery, Vol.18,pag. 826-832, 2007

K.Mikula,A.Sarti,F.Sgallari, "Co-volume method for Riemannian mean curvature flow in subjective surfaces multiscale segmentation", Computing and Visualization on Science, vol. 9(1), pag 23-31,2006

G.Citti, A.Sarti, "A Cortical Based Model of Perceptual Completion in the Roto-Translation Space", Journal of Mathematical Imaging and Vision, vol.24, n.3,, pag.307-326, 2006

A.Sarti, C.Corsi, E.Mazzini, C.Lamberti, "Maximum Likelihood Segmentation of Ultrasound Images with Rayleigh Distribution", IEEE Trans. Ultras. Ferroelectr. Freq. Control, Vol 52, n.6, pag. 947-960, 2005

G.Citti, M.Manfredini,.A.Sarti, "Neuronal Oscillations in the Visual Cortex: Gamma-convergence to the Riemannian Mumford-Shah Functional", SIAM Journal Mathematical Analysis, vol. 35, n.6, pag. 1394-1419, 2004

A.Sarti, G.Citti, M.Manfredini, “From Neural Oscillations to Variational Problems in the Visual Cortex”, invited paper on Journal of Physiology Paris, vol. 97, n.2-3, pag. 379-385, 2003

M.Ursino, E. LaCara, A.Sarti, “Binding and segmentation of multiple objects through neural oscillators inhibited by contour information”, Biological Cybernetics, Vol.89, n. 1, pag.56-70, 2003

A.Sarti, K. Mikula,F. Sgallari, C.Lamberti, “Evolutionary Partial Differential Equations for Biomedical Image Processing”, Journal of Biomedical Informatics, vol. 35, n.2 pag. 77-91, 2002

C.Corsi, G.Saracino, A.Sarti, C.Lamberti, “Left Ventricular Volume estimation for Real-time Three-dimensional Echocardiography”, IEEE Trans. Medical Imaging, vol. 21, n. 9, pag. 1202-1208, 2002

A. Sarti, R. Malladi, J.A. Sethian, “Subjective Surfaces: A Geometric Model for Boundary Completion”, International Journal of Computer Vision, Vol 46, n.3, pag. 201-221, 2002.

C. Corsi, M. Borsari, F. Consegnati, A. Sarti, C. Lamberti, A. Travaglini, T. Shiota, J. D. Thomas “Left ventricular endocardial surface detection based on real-time 3D echocardiographic data”. European Journal of Ultrasound. Vol. 13, pag. 41-51, 2001.

Sarti, C.Lamberti, R.Malladi, "Level Set Models for Analysis of 2D and 3D Echocardiographic Data", *in Geometric Methods in Biomedical Image Processing* , edited by Ravi Malladi, Springer Editions, pag. 43-61, 2001

Sarti, G.Citti, “Subjective Surfaces and Riemannian Mean Curvature Flow of Graphs”, Acta Mathematica Universitatis Comenianae, Vol. 70, n.1, pag. 85-104, 2001.

A.Sarti, C. Ortiz, S. Locket, R. Malladi,"A geometric model for 3D confocal image analysis", IEEE Transactions on Biomedical Engineering,Vol. 47, n.12, pag. 1600-1610, 2000.

A.Sarti, R. Malladi, J.A. Sethian,"Subjective Surfaces: A Method for Completing Missing Boundaries", Proceedings of the National Academy of Sciences of the United States of America, Vol. 12, N.97, pag. 6258-6263, 2000.

A.Tura, A. Sarti, T. Gaens, C. Lamberti, Regularization of blood motion fields by modified Navier-Stokes equations, Medical Engineering & Physics, Vol. 21, n. 1, pag. 27-36, 1999.

A.Sarti, K. Mikula,F. Sgallari, "Nonlinear Multiscale Analysis of 3D Echocardiographic Sequences", IEEE Transactions on Medical Imaging,Vol.18, N.6, pag. 453-466, 1999.

A.Sarti, R.Gori, C.Lamberti, "A physically based model to simulate maxillo-facial surgery from 3D CT images", Future Generation Computer Systems, Elsevier editions, Vol. 15, pag. 217-221, 1999.

A.Handlovicova, K.Mikula, A.Sarti, "Numerical solution of nonlinear diffusion equations related to level set formulation of mean curvature flow", Computing in Visualization and Science, Vol. 3, N.1, pag. 179-182, 1998.

F.Iudicello, F.S.Henry, M.W.Collins, S.Salmons, A.Sarti, C. Lamberti. "Comparison of hemodynamics structures betwen a skeletal muscle ventricle and the human left ventricle", Internal Medicine, vol. 5, pag. 1-10, 1997

G.Zini, A.Sarti, C.Lamberti, "Application of continuum theory and multi-grid methods to motion evaluation from 3D Echocardiography", IEEE Transactions on Ultrasonics, Ferroelectrics and Frequency Control, Vol. 44, N.2, pag. 297-308, 1997.

P.Baraldi, A.Sarti , C.Lamberti, A.Prandini, and F.Sgallari,"Evaluation of differential optical flow Techniques on Syntesized Echo Images". IEEE Transactions on Biomedical Engineering, Vol. 43, n.3, pag. 259-272, 1996.

A.Sarti, F. Iudicello, C. Lamberti, M.W. Collins,“Comprehensive numerical modelling of the human left ventricle from 3D echocardiography”. Biomedicine & Pharmacotherapy, Jan 1996

F. Iudicello, F.S. Henry, M.W. Collins, S. Salmons, A. Sarti, C. Lamberti,

"Comparison of haemodynamic structures in skeletal muscle ventricle and in a human lef.t ventricle". Biomedicine & Pharmacotherapy, Jan 1996

M.W. Collins, T.M. Griffith, A. Sarti, "Wall shear stress and its relationship to endothelium-derived relaxing factor". Biomedicine & Pharmacotherapy, Jan 1996

A.Sarti, C.Lamberti, P.Bassi, "3D modelling of phased array generated ultrasounds in lossy media", Computerized Medical Imaging and Graphics, Vol.17, n.5, pag. 339-343, 1993.

Books

A.Sarti, G.Citti, D.Piotrowski, "Differential heterogenesis: mutant forms, sensitive bodies", Springer, 2022

A. Sarti, F. Montanari, F. Galofaro ed., "Individuation and Morphogenesis", Springer Publisher, 2015.

"Harmonic and Geometric Analysis",edited by G.Citti, L.Grafakos, C.Pérez, A.Sarti, X.Zhong, Birkhauser Basel Publisher, 2015.

Citti, A.Sarti ed., "Neuromathematics of Vision", Springer Publisher 2014.

F.Berardi, A.Sarti, "RUN Morphogenesis", 2012, Documenta Kassel Publisher.

Chapters in Books

A.Sarti, D.Barbieri, "Neuromorphology of meaning", in "Quantitative and qualitative practices in contemporary semiotic research", ed. Dario Compagno, Springer publisher 2017.

A. Sarti, D. Piotrowski, "Individuation amd Semiogenesis: an interplay between geometric harmonics and structural morphodynamics", in "Individuation and Morphogenesis", Springer publisher, 2015.\l

G.Citti,A.Sarti,"Models of the visual Cortex in Lie groups", in "Harmonic and Geometric Analysis",edited by G.Citti, L.Grafakos, C.Pérez, A.Sarti, X.Zhong, Birkhauser Basel. 2015.
http://www.springer.com/birkhauser/mathematics/book/978-3-0348-0407-3

G.Citti, A.Sarti, "From functional architectures to percepts: a neuromathematical approach", in "Neuromathematics of Vision", edited by G.Citti, A.Sarti, pag. 131-171 Springer 2014.

A.Sarti, G.Citti, "Field Theory in the Visual Cortex", Computer Vision from Surfaces to 3D objects, C.Tyler editor, CRC Press, 2011

A.Sarti, "Subjective Surface Computation in Visual Perceptual Grouping", in PDE and Level Sets: Algorithmic Approaches to Static and Motion Imagery, edited by J.Suri and S. Laxminarayan,
Kluwer Academic, 2002

J.Suri, D.Chopp, A.Sarti, S.Laxminarayan,"The future of PDEs and Level Sets", in PDE and Level Sets: Algorithmic Approaches to Static and Motion Imagery, edited by J.Suri and
S. Laxminarayan, Kluwer Academic, 2002

A.Sarti, K.Mikula,F.Sgallari,C.Lamberti, "Nonlinear Multiscale Analysis Models for Filtering of 3D + Time Biomedical Images", *in Geometric Methods in Biomedical Image Processing* , edited by Ravi Malladi, Springer Editions, pag. 107-126,2002

A.Sarti, R.Gori, A.Bianchi, C.Marchetti, C.Lamberti, "Maxillo-facial Virtual Surgery from 3D CT Images", in *VR in Medicine*, edited by Metin Akay and Andy Marsh, Springer Editions, 2000.

K.Mikula, A.Sarti, F.Sgallari, "Co-volume level set method in subjective surface based medical image segmentation", in Handbook of Medical Image Analysis: Segmentation and registration models, edited by Jasit Suri, Marcel Dekker Inc, New York, in press

A.Sarti, C.Corsi, C.Lamberti , "New Image Processing Techniques for Real Time Three-dimensional Echocardiography", in Medical Imaging Systems, edited by C.Leondes, World Scientific Publishing, Co. in press

Peer-reviewed conference proceedings

C.Lamberti, A.Sarti, C.Corsi, R.Battani, R.Gori, C.Marchetti, A.Bianchi, "VISU: A System for Computer Aided Cranio-Facial Surgery", MEDICON 2004, Ischia 31 luglio – 5 agosto 2004.

A.Sarti, "A Cortical Based Model of Perceptual Completion in the Roto-Translation Space: Part I", Proceedings of the Workshop on Second Order Subelliptic Partial Differential Equations and Applications, Cortona, 15-21, giugno 2003

C. Corsi, G. Saracino, A. Sarti, C. Lamberti Semi-automatic surface detection and display from real-time 3D echocardiography in abnormal left ventricles. *Proceedings of the 2nd European Medical and Biological Engineering and Computing EMBEC'02,* (Wien, Austria, December 4-8, 2002), edited by H. Hutten, P. Krösl, Vol. 3, Part 2: 1082-1083, Verlag, Graz (ISBN: 3-901351-62-0).

M. Maggio Binucci, C. Lamberti, R. Gori, L. Montagna and A. Sarti : "An Integrated System for Maxillo-Facial Surgery Simulation", in Computer Assisted Radiology and Surgery (CARS 2002). Eds. H. U. Lemke, M.W. Vannier, K. Inamura, A.G. Barman, K. Doi and J. H. C. Reiber. ISBN 3-540-43655-3 Springer-Verlag Berlin, Heidelber, New York, pp. 19-24, 2002.

C. Lamberti, R. Battani, R. Gori, L. Calori, M. Maggio Binucci, A. Sarti : "Medical Data Management for Virtual Surgery", in EuroPACS 2002 (Eds. J. Niinimaki, E. Ilkko & J. Reponen). ISBN 952-5325-06-7, Oulu University Press., pp. 131-134, 2002.

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